4.2.1.10 Waste Management

This section summarizes the impacts on waste management at Hanford under No Action, each of the long-term storage alternatives, and the phaseout of Pu storage. There is no spent nuclear fuel or HLW associated with Pu or HEU storage. Table 4.2.1.10–1 lists the projected sitewide waste generation rates and treatment, storage, disposal capacities under No Action for 2005. Projections for No Action were derived from the most recent available environmental data, with the assumption that operational requirements for waste generation in 2005 would be approximately equal to the 1993 generation volume. The projection does not include wastes from future, yet uncharacterized environmental restoration activities, such as content characterization and decommissioning of 149 single shell tanks, treating 28 double shell tanks, and removing over 500 buildings. The projections for No Action could change significantly depending on the decisions resulting from the PEIS on waste management being prepared by DOE. Table 4.2.1.10–2 provides the estimated incremental operational waste volumes projected to be generated at Hanford as a result of the various storage alternatives prior to treatment. Some of the waste values described in this section are different than the waste values in the table. For those values that differ (for example LLW), the table gives waste generated pre-treatment values and the text discusses post-treatment values (indicated as after treatment and volume reduction). The waste volumes generated from the various storage alternatives and the resultant waste effluent used for the waste impacts analysis can be found in Section E.3.1. Facilities that would support the storage of Pu and/or HEU would treat and package all waste generated into forms that would enable staging and/or disposal in accordance with RCRA and other applicable statutes. Depending in part on decisions in waste-type-specific RODs for the Waste Management PEIS, wastes could be treated and disposed of onsite or at regionalized or centralized DOE sites. For the purposes of analyses only, this PEIS assumes that TRU and mixed TRU waste would be treated onsite to the current planning-basis WIPP WAC, and shipped to WIPP for disposal. This PEIS also assumes that LLW, mixed LLW, hazardous, and nonhazardous wastes would be treated and disposed of in accordance with current site practice.

Preferred Alternative: No Action Alternative

Under this alternative, high-level, TRU, low-level, mixed, hazardous, and nonhazardous wastes, and spent nuclear fuel would continue to be managed from the missions outlined in Section 3.2. Hanford no longer has a weapons production mission. Its focus is to decommission the reactors and site facilities, as well as cleanup approximately 1,450 km^2 (560 mi^2) of land. The impacts of the wastes generated as part of environmental restoration and D&D activities are addressed in the *Final Environmental Impact Statement: Decommissioning of Eight Surplus Production Reactors at the Hanford Site, Richland, Washington* (DOE/EIS–0119F) and the *Draft Hanford Remedial Action Environmental Impact Statement and Comprehensive Land Use Plan* (DOE/EIS–0222D). Under No Action, Hanford would continue to store its inventory of Pu, and treat, store, and dispose of its legacy and newly generated wastes in current and planned facilities.

The Pu addressed in this PEIS is limited to materials currently stored within protected vaults and gloveboxes, and additional materials within process lines and process equipment within the PFP Complex in the 200 West Area. The PFP had been used to conduct Pu processing operations such as Pu purification, Pu recovery, oxide production, metal production, and parts fabrication. The PFP has also been used for receipt and large-scale storage of onsite and offsite Pu scrap and product materials. [Text deleted.] Modifications to the facilities will proceed following the ROD resulting from the PFP EIS (DOE/EIS-0244F) to meet current regulations and provide for interim storage. Maintenance, assay, packaging, and monitoring of the inventory would produce TRU, low-level, hazardous, and nonhazardous wastes. These wastes would be treated, stored, and disposed of in compliance with existing regulations.

Under No Action, the processing of legacy wastes would require new facilities, since the necessary treatment, storage, and disposal facilities either do not exist or are nearing capacity. Spent nuclear fuel would be managed in accordance with the amended ROD (61 FR 9441) from the *Department of Energy Programmatic Spent Nuclear Fuel Management and Idaho National Engineering Laboratory Environmental Restoration and Waste*

Management Programs Final Environmental Impact Statement (DOE/EIS-0203-F) and the ROD (61 FR 10736) from the follow-on tiered site-specific NEPA analysis, *Final Environmental Impact Statement on the Management of Spent Nuclear Fuel from the K Basins at the Hanford Site, Richland, Washington* (DOE/EIS-0245). TRU waste already packaged to current planning-basis WIPP WAC would either be stored or have been shipped. In compliance with the *Federal Facility Compliance Act* of 1992, mixed waste would have been treated and disposed of according to the Hanford Tri-Party Agreement. Solid LLW would continue to be buried at the onsite low-level disposal facility.

Upgrade Alternative

Upgrade Without Rocky Flats Environmental Technology Site or Los Alamos National Laboratory Plutonium Subalternative

Modify Existing Fuels and Materials Examination Facility for Plutonium Storage

The modification of the FMEF or construction of a new storage facility for the continued storage of Pu would have a small impact on existing Hanford waste management activities. Construction waste volumes as presented in Table E.3.1.1–1 would have minimal impact on Hanford waste management activities. Waste generated during construction would consist of wastewater and solid nonhazardous and hazardous wastes. Nonhazardous waste would be disposed of as part of the construction project by the contractor, and the hazardous waste would be shipped offsite to commercial RCRA-permitted treatment and disposal facilities. Operational waste volumes as shown in Table 4.2.1.10–2 would increase slightly due to increased surveillance activities over No Action.

Approximately 20 m^3 (26 yd^3) of TRU waste from damaged PCVs and contaminated glovebox panels, windows, and gaskets would need to be treated and packaged to meet the current planning-basis WIPP WAC or alternative treatment level. While awaiting shipment to WIPP (depending on decisions made in the ROD associated with the supplemental EIS for the proposed continued phased development of WIPP for disposal of TRU waste), the TRU waste would be stored in above-grade storage facilities at the Hanford Central Waste Complex and the Transuranic Waste Storage and Assay Facility. Three additional truck shipments per year or, if applicable, two regular train shipments per year or one dedicated train shipment every 3 years, would be required to transport this waste to WIPP.

After treatment and volume reduction, approximately 42 m^3 (56 yd^3) of LLW from solidified liquid LLW (such as decontamination solutions), protective clothing, HEPA filters, glovebox gloves, and decontamination equipment and materials would require disposal in the 200 Area LLW Burial Grounds. Assuming a land usage of 3,400 m^3/ha (1,800 yd^3/acre), this would require 0.01 ha/yr (0.03 acre/yr) of LLW disposal area.

Contaminated shielding and cleaning materials would be the major contributors to the 5 m^3 (7 yd^3) of mixed LLW. This small amount of mixed LLW could be treated and disposed of in accordance with the Hanford Tri-Party Agreement through the use of existing and planned facilities.

The 0.57 m^3 (150 gal) of liquid hazardous waste such as lubricants, cleaning solvents, paint, and lube oil and 4 m^3 (5 yd^3) of solid hazardous waste such as lead packing, wipes, and solid materials contaminated with oils, lubricants, and cleaning solvents would have minimal impact on waste management activities at Hanford. The hazardous wastes would be packaged in DOT-approved containers and shipped offsite to commercial RCRA-permitted treatment and disposal facilities.

Approximately 8,330 m^3 (2,200,000 gal) of liquid nonhazardous waste to include sanitary, utility and process wastewaters, and cooling system blowdown would be processed using the 200 West Area Treatment Facility or one of the numerous septic tanks/subsurface disposal systems. Existing and planned liquid nonhazardous waste facilities are adequate. After volume reduction, approximately 459 m^3 (600 yd^3) of solid nonhazardous waste

such as clean non-Pu metals, packing materials, office trash, defective and damaged equipment, and industrial waste from utility and maintenance operations would be shipped to one of the onsite landfills.

Construct New 200 West Area Facility for Plutonium Storage

The construction and operation of a new storage facility for the continued storage of the current inventory of Pu would have a small impact on existing Hanford waste management activities. The impacts are identical to those identified in the preceding option of modifying the FMEF.

Upgrade With All or Some Rocky Flats Environmental Technology Site and Los Alamos National Laboratory Plutonium Subalternative

Modify Existing Fuels and Materials Examination Facility for Plutonium Storage

As shown in Table E.3.1.1–5 construction waste volumes would increase for the additional required construction. The types of operational waste are identical to those discussed earlier, but there would be a small increase in volume. Approximately 21 m^3 (27 yd^3) of TRU waste would be treated and packaged to meet the current planning-basis WIPP WAC or alternative treatment level. While awaiting shipment to WIPP (depending on decisions resulting from the supplemental PEIS noted earlier), the TRU and mixed TRU waste would be stored in above-grade storage facilities in the Hanford Central Waste Complex and the Transuranic Waste Storage and Assay Facility. Three additional truck shipments per year or, if applicable, two regular train shipments per year or one dedicated train shipment every 3 years, would be required to transport these wastes to WIPP.

After treatment and volume reduction, approximately 45 m^3 (59 yd^3) of LLW would require disposal in the 200 Area LLW Burial Grounds. Assuming a land usage of 3,400 m^3/ha (1,800 yd^3/acre), this would require 0.01 ha/yr (0.03 acre/yr) of LLW disposal area. The 5 m^3 (7 yd^3) of solid mixed LLW would be treated and disposed of in accordance with the Hanford Tri-Party Agreement through the use of existing and planned facilities. The 0.57 m^3 (150 gal) of liquid hazardous wastes and 4 m^3 (5 yd^3) of solid hazardous wastes would have minimal impact on waste management activities at Hanford. The hazardous wastes would be packaged in DOT-approved containers and shipped offsite to commercial RCRA-permitted treatment and disposal facilities. Approximately 8,780 m^3 (2,320,000 gal) of liquid nonhazardous wastes to include sanitary, utility and process wastewaters, and cooling system blowdown would be processed using the 200 West Area Treatment Facility or one of the numerous septic tanks/subsurface disposal systems. Existing and planned liquid nonhazardous waste facilities are adequate. After volume reduction, approximately 483 m^3 (632 yd^3) of solid nonhazardous waste would require disposal at one of the onsite landfills.

Distributing the RFETS and LANL material to more than one site would reduce the operational waste volumes. The decrease would be proportional to the amount of material.

Construct New 200 West Area Facility for Plutonium Storage

The impacts of constructing and operating a new storage facility to include RFETS and LANL Pu would be identical to those identified in the preceding option of modifying the FMEF to include RFETS and LANL Pu.

Consolidation Alternative

Construct New Plutonium Storage Facility

Construction and operation of a consolidated Pu storage facility would have an impact on existing Hanford waste management activities, increasing the generation of TRU, low-level, mixed, hazardous, and nonhazardous wastes. Waste generated during construction would consist of wastewater and solid nonhazardous

and hazardous wastes. The solid nonhazardous waste would be disposed of as part of the construction project by the contractor, and the hazardous waste would be shipped to commercial RCRA-permitted treatment and disposal facilities. No soil contaminated with hazardous or radioactive constituents is expected to be generated during construction. However, if any was generated it would be managed in accordance with site practice and all applicable Federal and State regulations. The types of operational wastes from the consolidated Pu storage facility would be the same as those from the Upgrade Alternative, but the quantity would change.

After treatment and volume reduction of TRU waste, approximately 5 m^3 (7 yd^3) of TRU waste and 4 m^3 (5 yd^3) of mixed TRU waste from leaded gloves and windows and contaminated lead shielding would be treated and packaged to meet the current planning-basis WIPP WAC or alternative treatment level. While awaiting shipment to WIPP (depending on decisions resulting from the supplemental EIS noted earlier), the TRU and mixed TRU wastes would be stored in above-grade storage facilities in the Hanford Central Waste Complex and the TRU Waste Storage and Assay Facility. One additional truck shipments per year or, if applicable, one regular train shipment every 2 years or one dedicated train shipment every 6 years, would be required to transport these wastes to WIPP.

Following treatment and volume reduction, approximately 630 m^3 (824 yd^3) of LLW would require disposal in the 200 Area LLW Burial Grounds. Assuming a land usage of 3,400 m^3/ha (1,800 yd^3/acre), this would require approximately 0.2 ha/yr (0.5 acre/yr) of LLW disposal area. The 0.2 m^3 (50 gal) of liquid mixed LLW and 65 m^3 (85 yd^3) of solid mixed LLW would be treated and disposed of in accordance with the Hanford Tri-Party Agreement through the use of existing and planned facilities. The 2 m^3 (476 gal) of liquid hazardous waste and 2 m^3 (3 yd^3) of solid hazardous waste would have minimal impact on waste management activities at Hanford. The hazardous wastes would be packaged in DOT-approved containers and shipped offsite to commercial RCRA-permitted treatment and disposal facilities. Approximately 110,000 m^3 (29,000,000 gal) of liquid nonhazardous waste would be treated and recycled by the consolidated facility. After volume reduction, 570 m^3 (746 yd^3) of solid nonhazardous waste would require disposal at one of the onsite landfills.

Collocation Alternative

Construct New Plutonium and Highly Enriched Uranium Storage Facilities

Construction and operation of a consolidated Pu storage facility collocated with HEU storage would have an impact on existing Hanford waste management activities, increasing the generation of TRU, low-level, mixed, hazardous, and nonhazardous wastes. Waste generated during construction would consist of wastewater and solid nonhazardous and hazardous wastes. The solid nonhazardous waste would be disposed of as part of the construction project by the contractor, and the hazardous waste would be shipped to commercial RCRA-permitted treatment and disposal facilities. No soil contaminated with hazardous or radioactive constituents is expected to be generated during construction. However, if any was generated it would be managed in accordance with site practice and all applicable Federal and State regulations. Since there is no TRU or mixed TRU wastes associated with HEU storage, the impacts from TRU and mixed TRU wastes are identical to those identified in the consolidated Pu storage alternative. The sources of waste are similar to those of the Pu storage facilities except the source of radioactive contamination from HEU storage is uranium.

Following treatment and volume reduction, approximately 630 m^3 (824 yd^3) of LLW contaminated with Pu and 20 m^3 (26 yd^3) of LLW contaminated with uranium would require disposal in the 200 Area LLW Burial Grounds. Assuming a land usage of 3,400 m^3/ha (1,800 yd^3/acre), this would require approximately 0.2 ha/yr (0.5 acre/yr) of LLW disposal area. The 0.2 m^3 (55 gal) of liquid mixed LLW and 66 m^3 (86 yd^3) of solid mixed LLW would be treated and disposed of in accordance with the Hanford Tri-Party Agreement through the use of existing and planned facilities. The 2 m^3 (530 gal) of liquid hazardous waste and 2 m^3 (3 yd^3) of solid hazardous waste would have minimal impact on waste management activities at Hanford. The hazardous wastes would be packaged in DOT-approved containers and shipped offsite to commercial RCRA-permitted treatment and disposal facilities. The 146,000 m^3 (39,000,000 gal) of liquid nonhazardous waste would require construction

of sanitary, utility, and process wastewater treatment systems. After volume reduction 880 m^3 (1,150 yd^3) of solid nonhazardous wastes would require disposal at one of the onsite landfills.

Subalternative Not Including Strategic Reserve and Weapons Research and Development Materials

The exclusion of strategic reserve and weapons R&D materials would reduce the amount of operational waste volumes shown in Table 4.2.1.10–2 for the Upgrade With All or Some RFETS and LANL Pu Subalternative, the Consolidation Alternative, and the Collocation Alternative. The decrease would be proportional to the amount of material excluded. [Text deleted.]

Phaseout

The phaseout of Pu storage would have no impact on Hanford waste management activities. The volume of waste would not decrease until the facilities in which Pu is stored were D&D.